

Serial No.: 10/036,788
Docket No.: ST00028USU (130-US-U1)

AMENDMENTS TO THE CLAIMS

1.(Original) A method for phase sampling an incoming signal in a digital receiver, comprising:
downconverting the incoming signal to an Intermediate Frequency (IF) signal;
running a counter at a higher frequency than that of the Intermediate Frequency (IF) signal;
outputting a state of the counter when the IF signal has a zero crossing,
outputting a state of a magnitude of the IF signal when the IF signal has a zero crossing; and
extracting the phase of the IF signal from the outputted state of the counter and the outputted
state of the magnitude.

2.(Original) The method of claim 1, wherein the digital receiver is a Global Positioning
System (GPS) receiver.

3.(Original) The method of claim 2, wherein the phase extraction is performed by subtracting
an estimated phase from the extracted phase of the IF signal.

4.(Original) The method of claim 3, wherein the counter is running at a frequency that is an
integer multiple of the IF.

5.(Previously Amended) A method for phase sampling an incoming signal in a digital
Global Positioning System (GPS) receiver, comprising:
downconverting the incoming signal to an Intermediate Frequency (IF) signal;

Serial No.: 10/036,788
Docket No.: ST00028USU (130-US-U1)

running a counter at a higher frequency than that of the Intermediate Frequency (IF) signal and at an integer multiple of the IF;

outputting a state of the counter when the IF signal has a zero crossing,

outputting a state of a magnitude of the IF signal when the IF signal has a zero crossing; and

extracting the phase of the IF signal from the outputted state of the counter and the outputted state of the magnitude, wherein the phase extraction is performed by subtracting an estimated phase from the extracted phase of the IF signal and the extracted phase of the IF signal is given by :

$$-2\pi J/M \text{ radians,}$$

where M is the integer multiple of the IF, and J is the outputted state of the counter.

6.(Original) The method of claim 5, wherein the state of the magnitude of the IF signal is a digital state.

7.(Original) The method of claim 6, wherein the digital state is at least two bits.

8.(Currently Amended). A method for phase sampling an incoming signal in a digital receiver, comprising:

downconverting the incoming signal to an Intermediate Frequency (IF) signal;

running a counter at a higher frequency than that of the Intermediate Frequency (IF) signal;

holding a state of the counter when the IF signal has a zero crossing;

holding a magnitude bit that is set to 1 if an absolute value of the IF signal exceeded a threshold prior to an occurrence of a previous zero crossing; and

Serial No.: 10/036,788
Docket No.: ST00028USU (130-US-U1)

extracting the phase of the IF signal from the state of the counter and the state of the magnitude
bit.